

---

# *Murdannia cryptantha* (Commelinaceae), a New Species with Cleistogamous Flowers from Australia and Papua New Guinea

Robert B. Faden

Department of Botany, National Museum of Natural History, Smithsonian Institution,  
Washington, D.C. 20560, U.S.A.

---

**ABSTRACT.** *Murdannia cryptantha* (Commelinaceae), a new species from Australia and Papua New Guinea, is described. It is most closely related to *M. graminea*, and it is the first species of *Murdannia* reported to have cleistogamous flowers.

The species of *Murdannia* Royle once were mostly included in the genus *Aneilema* R. Brown (Faden, 1978). Thus, when I attempted to determine the correct generic placement for all epithets in *Aneilema*, I also surveyed the species of *Murdannia* (Faden, 1991). In the course of that investigation I came upon slender plants of a *Murdannia* species from northern Queensland, Australia, that generally resembled the widespread species *M. graminea* (R. Brown) G. Brueckner except for the presence of sessile, axillary flowers and capsules, in addition to terminal inflorescences and infructescences. It was not until I obtained living material (*A. Faden 2/91*) that I was able to confirm that such plants represent a distinct species.

***Murdannia cryptantha*** Faden, sp. nov. TYPE: Australia. Queensland. Port Curtis Dist.: road from Rockhampton to Emerald, 3 km beyond Gogango, fenced area across railway line, brigalow bushed-grassland with frequent small temporary water holes, edge of temporary pools, 3 Mar. 1991, *A. J. Faden 2/91* (holotype, US; isotypes, K, BRI). Figures 1–2.

Herba perennis foliis omnibus caulibus 1.5–7(–13) cm longis, 1.5–5.5 mm latis, thyrsis terminali et floribus axillaribus sessilibus vel subsessilibus cleistogamis, capsulis (5–)6–10(–12) mm longis, ca. 2 mm crassis, loculis (4–)6–8(–15)-seminibus, seminibus 0.6–0.9(–1.1) mm latis.

Perennial with thickened, sometimes fusiform roots to 3 mm thick. Shoots erect to ascending, often rooting at the lower nodes, to ca. 35 cm long, unbranched or sparsely branched basally. Internodes 2–7 cm long, glabrous to pubescent, sometimes the pubescence confined to a longitudinal line. Leaves all cauline, distichous or in an open spiral; sheaths 0.5–2 cm long, often splitting to the base,

ciliate or ciliolate at the apex and along the fused edge, sheath surface glabrous or pubescent; lamina sessile, linear-lanceolate, decreasing in length distally on the flowering shoot, conduplicate or planar, often recurved at the apex, 1.5–7(–13) cm long, 1.5–5.5 mm wide, with base rounded to somewhat amplexicaul and apex acuminate to acute, margins undulate or planar, ciliate or ciliolate at the base of the lamina, sometimes scabrid at the apex, otherwise glabrous, both surfaces of the lamina glabrous to sparsely pubescent, sometimes only the abaxial surface pubescent.

Inflorescences axillary and terminal, glabrous, the axillary enclosed within a leaf sheath and consisting of a single sessile, bracteolate cincinnus that produces 1–4 sessile or subsessile cleistogamous flowers, the terminal inflorescence a lax thyrsis consisting of 1–4 cincinni, each cincinnus to 4 cm long and producing up to 8 chasmogamous flowers. Bracts of the cincinni of the terminal inflorescences linear to ovate-lanceolate, 1–9 mm long; bracteoles of the terminal inflorescences ovate to lanceolate-elliptic, 0.7–2.5 mm long.

Flowers all bisexual or an occasional chasmogamous one staminate. Chasmogamous flowers slightly zygomorphic; pedicels erect, 4–8.5 mm long in flower, to 9 mm long in fruit, glabrous. Sepals subequal, boat-shaped, elliptic to oblong-elliptic, 3–7 mm long in flower, to 8 mm long in fruit, glabrous. Petals subequal, not clawed, ovate to suborbicular, 5–9 mm long, pale purple to mauve or lavender, glabrous. Filaments of stamens and staminodes free. Stamens antesealous, equal but all bending to one side of the flower, filaments bending outwards near the middle, 2.5–4 mm long, densely bearded with moniliform hairs below the middle, anthers dorsifixed, elliptic or oblong-elliptic, 1–2 mm long. Staminodes antepetalous, symmetrically arranged, filaments shorter and more slender than those of the stamens, densely bearded below the middle, antherodes basifixed, 0.5–0.7 mm long, usually ovate with a cordate base, yellow. Ovary sessile, trigonous, 2–2.5 mm long, trilocular, glabrous, locules up to 13-ovulate, ovules uniseriate, style bent away from

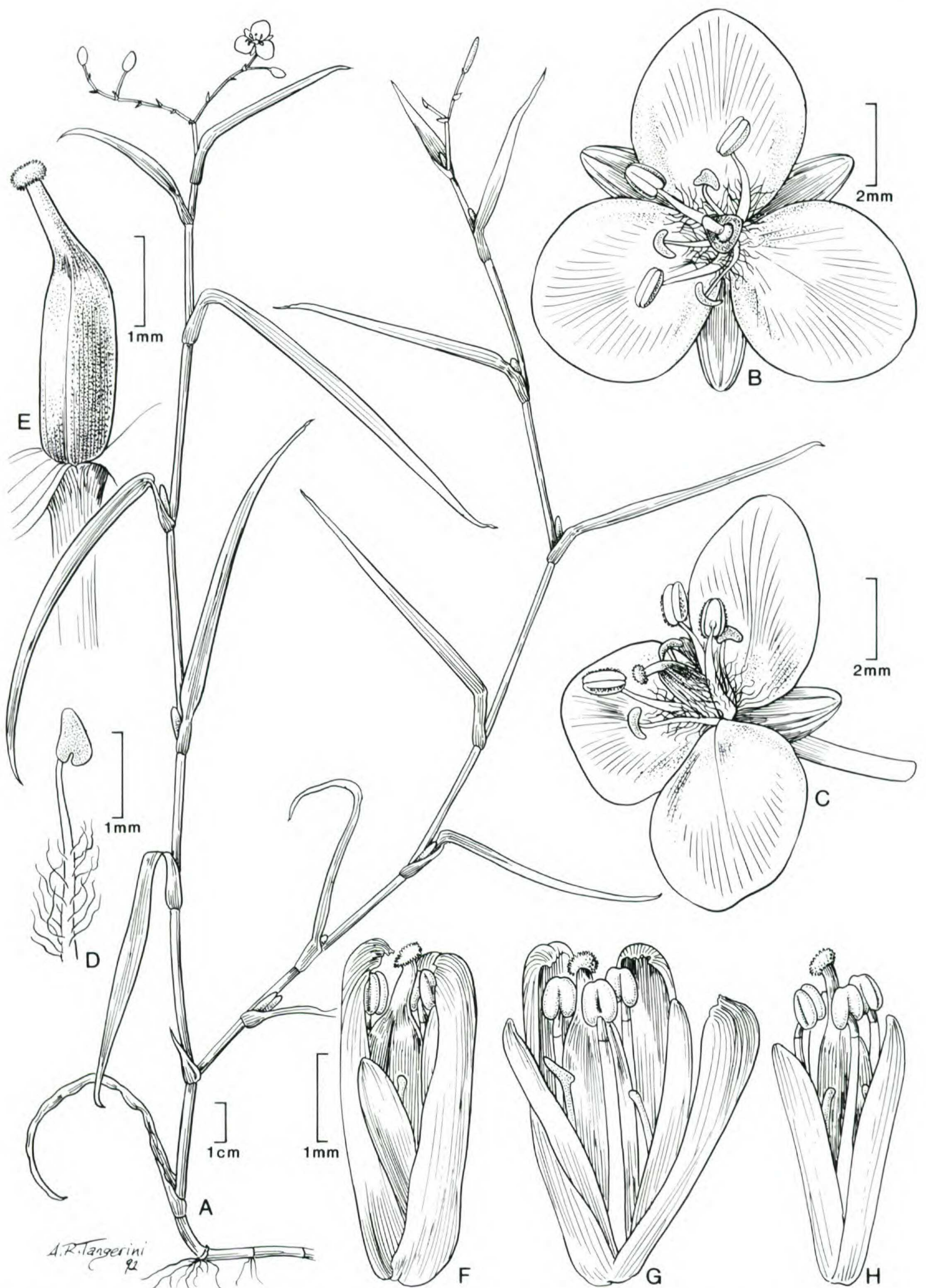


Figure 1. *Murdannia cryptantha* Faden. —A. Partial habit. —B. Chasmogamous flower, front view. —C. Chasmogamous flower, front/side view. —D. Staminode. —E. Gynoecium. —F. Cleistogamous flower, slightly opened. —G. Cleistogamous flower, front sepal and two petals pulled back. —H. Cleistogamous flower, sepals removed. All from A. Faden 2/91 except inflorescence on left shoot in A added from Brass 18709 (GH).

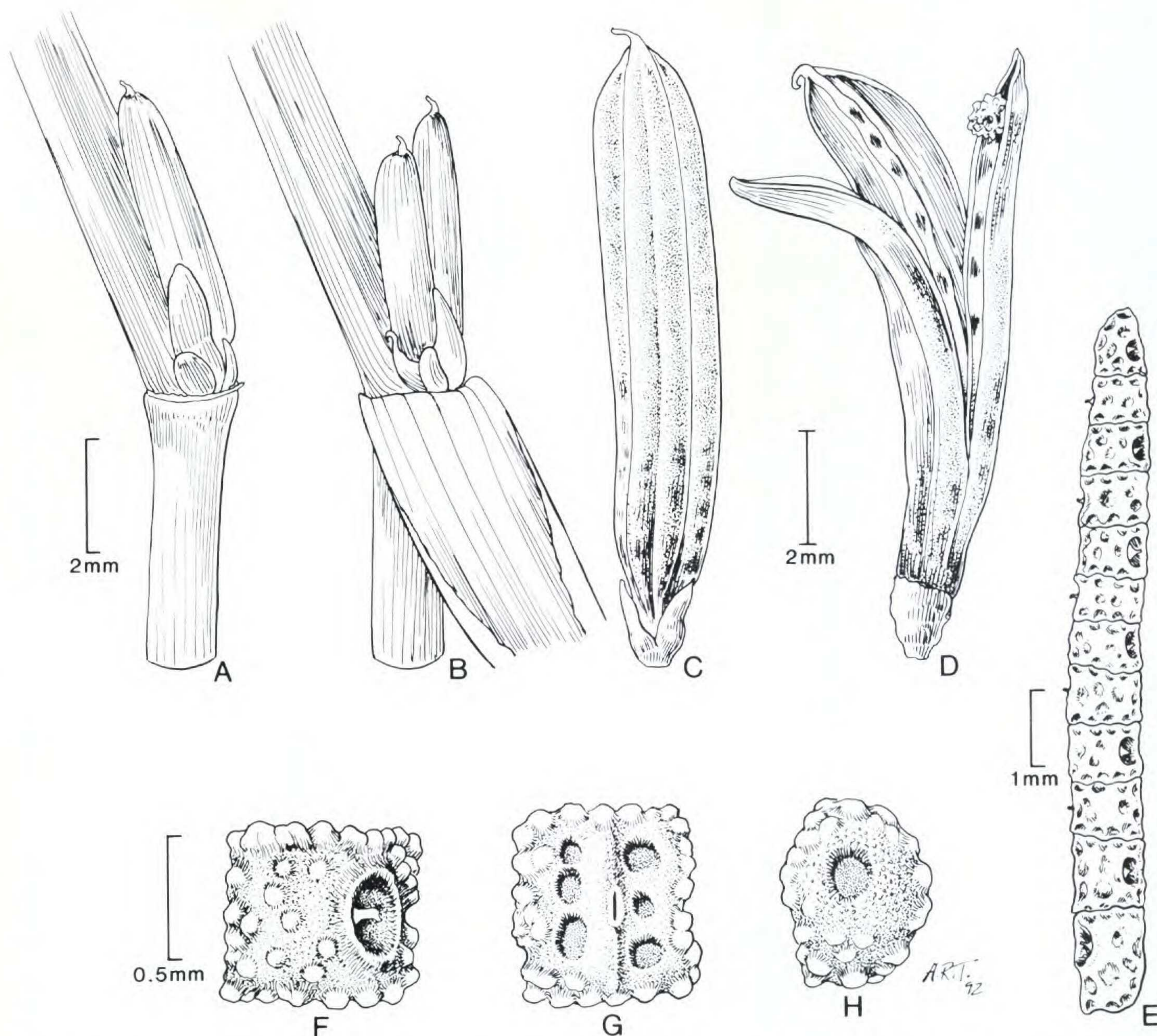


Figure 2. *Murdannia cryptantha* Faden. —A. Mature capsule and bud in axillary inflorescence. —B. Mature capsules from cleistogamous flowers in axillary inflorescence. —C. Mature capsule from cleistogamous flower, before dehiscence. —D. Capsule from cleistogamous flower, dehiscent. —E. All of the seeds from a single capsule locule, showing arrangement in locule. —F. Seed, dorsal view. —G. Seed, ventral view, showing hilum on raised ridge. —H. Seed, apical view. All from A. Faden 2/91.

the stamens, straight, 1–1.5 mm long, stigma capitate. Cleistogamous flowers sessile, difficult to differentiate from large buds, on the one hand, and young, developing fruits, on the other hand. Sepals oblong-elliptic, 3.5–4 mm long, glabrous. Petals elliptic to oblong-elliptic, 2.5–2.8 mm long, 0.7–1 mm wide. Filaments of stamens and staminodes free. Stamens subequal, filaments ca. 2–2.5 mm long, glabrous, jointed just below a swollen summit, anthers apparently dorsifixed, elliptic, ca. 0.5–0.7 mm long, dehiscence introrse. Staminodes variable in form, filaments ca. 1.1–1.3 mm long, very slender, glabrous, antherode minute, oblong to ovate, irregularly lobed or unlobed. Ovary sessile, ca. 2.5 mm long, trilocular, locules up to 15-ovulate, ovules uniseriate or partially biseriate, style ca. 0.5 mm long, stigma capitate.

Capsules trilocular, trivalved, dehiscent at least at the apex, cylindric-trigonal, apiculate, (5–)6–10 (–12) mm long, ca. 2 mm thick, usually dark brown at maturity, glabrous, cells of the outer wall transversely elongate, locules (4–)6–8 (–15)-seeded, seeds uniseriate. Seeds very variable in size, often within the same locule, rectangular to trapezoidal, rarely triangular in outline, the apical and basal seeds rounded on one end, (0.35–)0.6–1.5 (–1.75) mm long, 0.6–0.9 (–1.1) mm wide, testa brown to gray, rugose or verrucose and variously pitted, often farinose in the depressions and around the embryotega, hilum punctiform to elliptic, often on a raised longitudinal ridge, embryotega  $\pm$  lateral.

*Distribution.* Northern Queensland and northern Northern Territory, Australia to Papua New Guinea.

*Murdannia cryptantha* is undoubtedly most closely related to the very variable *M. graminea* because of its geophytic habit, thyrsiform inflorescence, bearded stamen and staminode filaments, and several-seeded capsule locules. *Murdannia cryptantha* can be distinguished by the presence of axillary, sessile or subsessile, cleistogamous flowers and capsules, and by its narrower capsules (2.5–4 mm thick in *M. graminea*), more numerous seeds per locule (2–5 per locule in *M. graminea*), and smaller seeds (1.2–3.9 mm long, 0.9–2 mm wide in *M. graminea*). It further differs by the absence of basal leaves (present in many specimens of *M. graminea*) and by the usually smaller leaves and terminal thyrses. In our present state of knowledge, specimens of *M. cryptantha* that lack fruits or cleistogamous flowers might not be separable from certain small plants of *M. graminea* unless characters such as style length (shorter than the ovary in *M. cryptantha* and longer (always?) than the ovary in *M. graminea*) prove to be consistent and other floral differences are found.

*Murdannia cryptantha* is the first in this genus of approximately 50 species to be recorded as having cleistogamous flowers. The best known examples of cleistogamy in the Commelinaceae are in *Commelina benghalensis* L. and *C. forskaolii* Vahl (see Faden, 1993).

In the above descriptions it should be noted that, following Faden (1991: 42), seed length is the distance between the apical and basal surfaces, i.e., the dimension parallel to the capsule length, and seed width is the distance between the lateral surfaces, i.e., transverse to the locule.

**Paratypes.** AUSTRALIA. Queensland. **Cook Dist.:** Douglas Creek, ca. 7 mi. SE of Mareeba, open forest on a stony ridge, 9 Apr. 1967, *Brass* 33523 (BRI); Lock-  
 erbie, 10 mi. WSW of Somerset, alt. 30 m, wet teatree

flat, 22 Apr. 1948, *Brass* 18361 (CANB, GH); Cape York Peninsula, Newcastle Bay, 2.5 mi. S of Somerset, alt. 50 m, wallum scrub in hollow between coastal sand dunes, 9 May 1948, *Brass* 18709 (CANB, GH); Mt. Molloy, moist flats, Jan.–Apr. 1941, *Carr* 195 [*in Flecker Herbarium* 7473], *Carr* 206 [*in Flecker Herbarium* 7484], *Carr* 207 [*in Flecker Herbarium* 7485] (all on one sheet) (QRS); near Mareeba, poorly drained soil with sandy surface in *Eucalyptus polycarpa*–*E. leptophleba* community, 23 Apr. 1967, *Pedley* 2276 (BRI); near Mareeba, layered woodland with *E. alba*, *E. leptophleba*, and *Melaleuca minutifolia*, 27 Feb. 1962, *Webb & Tracey* 5879 (BRI—3 sheets); Cairns, [collector illegible] (BRI#155853). **Darling Downs Dist.:** “Woodlands” 5 mi. SW of Westmar, gray clay soil in cleared brigalow, 14 Dec. 1961, *Pedley* 925 (BRI). **Northern Territory:** Arnhem Land Aboriginal Reserve, South Bay, Bickerton Island in the Gulf of Carpentaria, 13°45’S, 136°06’E, moist *Melaleuca leucodendra* stand, 11 June 1948, *Specht* 531 (BRI, CANB, US). PAPUA NEW GUINEA. **Central Dist.:** Rubulogo Creek, ca. 18 mi. N of Port Moresby, alt. ca. 140 ft., *Eucalyptus* savannah land, 12 Apr. 1967, *Pullen* 6688A (CANB; other duplicates cited but not seen: A, BRI, E, K, L, LAE).

**Acknowledgments.** I thank the directors of the herbaria cited for the loan of specimens; an anonymous reviewer for helpful comments; Alice Tangerini for the illustrations; and my wife, Audrey J. Faden, for collecting the new species and maintaining my research plants for many years.

#### Literature Cited

- Faden, R. B. 1978. Review of the lectotypification of *Aneilema* R. Br. (Comelinaceae). *Taxon* 27: 289–298.
- . 1991. The morphology and taxonomy of *Aneilema* R. Brown (Comelinaceae). *Smithsonian Contr. Bot.* 76: 1–166.
- . 1993. The misconstrued and rare species of *Commelina* (Comelinaceae) in the eastern United States. *Ann. Missouri Bot. Gard.* 80: 208–218.